

Claims.

1.(original) A ceramic filter for molten metal filtration comprising a ceramic powder and fibers bonded by a network of graphitized carbon.

2-3.(canceled)

4.(original) A filter for molten metal filtration comprising fibers bonded by a network of graphitized carbon.

5-21. (canceled)

22.(new) The filter of claim 1, wherein the ceramic powder is selected from a group consisting of zirconia, silica, alumina, brown fused alumina, magnesia, clay, talcum, mica, silicon, carbide, silicon-nitride, graphite and mixtures thereof.

23.(new) The filter of claim 1, wherein the filter comprises 5-15 wt% graphitized carbon.

24.(new) The filter of claim 1, wherein the fibers are selected from a group consisting of ceramic fibers, glass fibers, organic fibers, carbon fibers, meal fibers and mixtures thereof.

25.(new) The filter of claim 1, wherein the filter comprises 1-10 wt% fibers.

26.(new) The filter of claim 4, wherein the fibers are selected from a group consisting of ceramic fibers, glass fibers, organic fibers, carbon fibers, meal fibers and mixtures thereof.

27.(new) The filter of claim 26, wherein the ceramic fibers are selected from a group consisting alumina fibers, silica fibers, aluminosilicate fibers and mixtures thereof.

- 28.(new) The filter of claim 26, wherein the organic fibers are selected from a group consisting of polyester fibers, polyacrylnitrile fibers, polyethylene fibers, polyamide fibers, viscose fibers, aramid fibers and mixtures thereof.
- 29.(new) The filter of claim 4, wherein the filter comprises 1-10 wt% fibers.
- 30.(new) The filter of claim 4, wherein the fibers have a length from 0.1-5 mm.
- 31.(new) A method to produce filters for molten metal filtration comprising fibers and a bonded network of graphitized carbon, comprising:
- a) impregnating a foam comprising a thermoplastic material with a slurry comprising fibers and a graphitizable carbon-bonding precursor;
 - b) drying the impregnated foam;
 - c) firing the impregnated foam in a non-oxidizing atmosphere at a temperature from 500-1000°C, whereby the carbon-bonding precursor is converted at least partially to a bonded network of graphitized carbon.
- 32.(new) The method of claim 31, wherein the foam is impregnated by a plurality of coatings of the slurry.
- 33.(new) The method of claim 31, wherein the fibers include organic fiber and the organic fiber is pyrolyzed during firing.
- 34.(new) The method of claim 31, wherein firing is performed at a temperature from 600-700°C.
- 35.(new) The method of claim 31, wherein the non-oxidizing atmosphere comprises a reducing atmosphere.
- 36.(new) The method of claim 31, wherein the slurry includes a ceramic powder.

- 37.(new) The method of claim 31, wherein the foam comprises polyurethane.
- 38.(new) The method of claim 31, wherein the slurry includes fibers, carbon-bonding precursor, water, organic binder, and rheology additives.
- 39.(new) A method to produce filters for molten metal filtration comprising fibers and a bonded network of graphitized carbon, comprising:
- a) pressing a semi-damp mixture comprising fibers and a graphitizable carbon-bonding precursor to obtain a perforated article;
 - b) firing the perforated article in a non-oxidizing atmosphere at a temperature from 500-1000°C, whereby the carbon-bonding precursor is converted at least partially to a bonded network of graphitized carbon.
- 40.(new) The method of claim 39, wherein the slurry includes ceramic powder.
- 41.(new) The method of claim 39, wherein the graphitizable carbon-bonded precursor comprises high melting pitch.
- 42.(new) The method of claim 39, wherein the semi-damp mixture comprises:
- a) 0.1-20 parts fibers;
 - b) 2-15 parts graphitizable carbon-bonding precursor;
 - c) up to 95 parts ceramic powder;
 - d) up to 80 parts anti-oxidation material;
 - e) up to 90 parts graphite;
 - f) up to 10 parts organic binder; and
 - g) up to 4 parts dispersion agent.

- 43.(new) The method of claim 42, wherein the anti-oxidation material is selected from a group consisting of powders of steel, iron, bronze, silicon, magnesium, aluminum, boron, zirconium boride, calcium boride, titanium boride and mixtures thereof.
- 44.(new) The method of claim 42, wherein the anti-oxidation material comprises glass frit with 20-30 wt% boric oxide.
- 45.(new) The method of claim 42, wherein the organic binder is selected from a group consisting of PVA, starch, gums, sugar and mixtures thereof.
- 46.(new) The method of claim 42, wherein the dispersion agent comprises ligninsulphonate.
- 47.(new) The method of claim 42, wherein the semi-damp mixture includes up to 2 parts plasticizer.
- 48.(new) The method of claim 42, wherein the semi-damp mixture includes up to 1 part anti-foaming agent.
- 49.(new) The method of claim 39, wherein the non-oxidizing atmosphere comprises a reducing atmosphere.
- 50.(new) The method of claim 39, wherein firing is performed at a temperature from 600-700°C.